


County of Loudoun
Office of Transportation Services
MEMORANDUM

DATE: May 26, 2010

TO: Jane McCarter, Project Manager, Department of Planning

FROM: George Phillips, Senior Transportation Planner 

SUBJECT: **SPEX 2010-0001-Ryan Road Child Care Center
Second Referral**

Location: North side of Ryan Road (Route 772), east of Belmont Ridge Road (Route 659)

Background

In response to first OTS referral comments dated April 29, 2010, the Applicant has provided revised materials and responses for review. This review is based on materials received from the Department of Planning on May 7, 2010 including (1) a response letter from the Applicant's representative dated May 6, 2010 (2) a memo dated May 5, 2010 from the Applicant's traffic consultant (Wells & Associates) which provides supplemental information (3) proposed Conditions of Approval dated May 5, 2010 (4) a revised Statement of Justification dated May 5, 2010 and (5) a plan set prepared by J2 Engineers, Inc., revised through May 5, 2010.

Transportation Comments

Discussed below are the previous OTS comments from the first referral, the Applicant's response (May 6, 2010) and the current issue status in terms of whether the issue has been adequately addressed.

1. **Initial Staff Comment (First Referral April 29, 2010):** The Applicant's traffic study notes on page 6 that Ryan Road (Route 772) includes a crest / vertical curve in the vicinity of the proposed site entrance opposite Legacy Park Drive. This has been confirmed by OTS staff in a recent field visit. The Applicant will need to demonstrate that adequate sight distance is provided to meet VDOT standards. This should be confirmed with VDOT.

Applicant's Response (May 6, 2010): Sight distance will be verified at the time of site plan review and will be confirmed with VDOT. Please see proposed Condition of Approval #8.a.

Current Issue Status: A review of the proposed conditions indicates that the Applicant is committing to provide adequate sight distance to ensure compliance with VDOT requirements at the time of site plan. Issue resolved.

2. **Initial Staff Comment (First Referral April 29, 2010):** The unsignalized Ryan Road (Route 772)/Legacy Park Drive intersection is currently operating at LOS C or better during both peak hours. However, the Applicant's traffic study also shows that with the addition of the site entrance, the southbound approach from the site to Ryan Road would operate at LOS E during both peak hours, assuming the addition of a separate southbound right turn lane (see *Attachment 8*). A condition of approval requiring installation of this turn lane is necessary. Further, the traffic study notes that enough gaps in through traffic flow will be created by the traffic signal at Belmont Ridge Road (Route 659) combined with the wide median on Ryan Road (Route 772) for storage and separate lanes for southbound traffic. Additional information, demonstrated by a traffic study addendum or other analysis, is required to substantiate this assertion. Any additional analysis should examine the possibility of a signal at this intersection and the signal's relationship with the existing signal at Belmont Ridge Road (Route 659) and Ryan Road (Route 772).

Applicant's Response (May 6, 2010): Please see May 5, 2010 memo from Wells & Associates, Inc. The Wells & Associates response notes that a new condition 8b has been added that requires the installation of the separate south bound right turn lane as shown on the Special Exception Plat. The unsignalized maneuvers for vehicles on the side streets of Ryan Road require a two-stage gap acceptance based on the wide median that is available for storage. Thus, these vehicles cross two lanes, then proceed across or into the adjoining lanes to enter the mainline traffic stream. The number of available gaps for vehicles to make these maneuvers were observed through field data collected by W & A in the peak hour, peak direction, (eastbound during the A.M. peak/westbound during the P.M. peak) along Ryan Road. Gaps were measured beginning at a minimum of six (6) seconds and recorded during each of the peak hours studied and are summarized on Table 1 in Appendix A (See Attachment 1).

The results indicate that the majority of gaps ranged from 8 to 9 seconds during the AM peak hour and from 6 to 7 seconds during the P.M. peak hour. A total of 1,031 seconds were available during the A.M. peak hour and 989 seconds during the P.M. peak hour. Assuming a minimum crossing maneuver time of 6.5 seconds per vehicle as identified in the HCM, a total of 158 adequate gaps are available for vehicles during the A.M. peak hour and 152 adequate gaps are available during the P.M. peak hour. Thus, it appears that these gaps would accommodate the side-street left and through vehicles (98 A.M. peak hour/42 P.M. peak hour) projected at the site entrance, based on current traffic conditions.

Although it is anticipated that the through traffic on Ryan Road will increase, the gaps recorded do not account for the likelihood of a new traffic signal that would eventually be installed at the Ryan Road Claiborne Parkway intersection, located approximately 2,000

feet to the east of the site driveway. The signal would likely introduce larger gaps in the westbound direction during the evening peak hour. In addition, although the minimum gap size used in the study was six (6.5) seconds, field observations indicated that most vehicles are comfortable making these maneuvers at five (5) seconds. Assuming a 5 second gap, an additional 20 adequate gaps for vehicles would be added during the A.M. and P.M. peak hour.

As reported in the January 2010 traffic study, the site driveway would not meet VDOT spacing criteria for a traffic signal given the relatively short distance to Belmont ridge Road (Route 659)(850 feet). Further, the traffic study indicated that warrants for signalization would not be met at this location under total future conditions (See Attachment 1). Thus, based on the previously prepared traffic report, the relatively low side-street volume, and the available gaps that exist, these side-street movements would operate without major delays as identified in the traffic study.

Current Issue Status: The data referenced by the Applicant is provided in *Attachment 1*. The Applicant has clarified that adequate gaps exist without a traffic signal and that the traffic signal would not meet VDOT spacing criteria due to the proximity of the traffic signal at Ryan Road (Route 772) and Belmont Ridge Road (Route 659). Issue resolved, provided that VDOT concurs with the Applicant's analysis.

3. **Initial Staff Comment (First Referral April 29, 2010):** The Applicant's traffic study notes on page 20, Conclusion #5, that a separate westbound right-turn lane on Ryan Road (Route 772) is needed into the proposed site entrance. This needs to be included in the conditions of approval with this application.

Applicant's Response (May 6, 2010): *The westbound turn-lane on Ryan Road is depicted on the Plat and is noted in proposed Condition of Approval #8.c.*

Current Issue Status: The applicant has provided the recommended draft Condition of Approval in #8.c. Issue resolved.

4. Please note that the centerline of the site entrance approach to Ryan Road (Route 772) does not appear to properly align with the existing median break for Legacy Park Drive. The proposed roadway alignment must meet VDOT standards; confirmation by VDOT is necessary.

Applicant's Response (May 6, 2010): *VDOT staff has indicated that the alignment would be acceptable. This will be verified with VDOT at the time of site plan review.*

Current Issue Status: The Applicant notes that VDOT indicated that the alignment would be acceptable. Assuming the applicant documents this and that the site distance will be verified by VDOT at the time of site plan review, this issue is resolved.

5. Interparcel access is recommended in order to reduce trip lengths and minimize impact on Ryan Road, a major collector facility. However, the opportunity for interparcel access may be limited for this particular site and the surrounding subdivision (SBPL-2010-0001) given the existing and approved developments on all surrounding parcels. Please confirm.

Applicant's Response (May 6, 2010): *The existing and approved developments surrounding the SPEX site and pending SBPL 2010-0002 do not provide any opportunities or interparcel access.*

Current Issue Status: The Applicant has adequately confirmed the absence of available interparcel access. Issue resolved.

6. On Sheet 3 of the Plat, a 10' wide public access easement is shown along the site frontage. In order to facilitate pedestrian travel, it is recommended that the Applicant provide a 14' wide public access easement and a 10-foot wide trail along the site frontage along with a crosswalk across the site entrance. Subject to VDOT approval, the Applicant should also provide a crosswalk and signage to connect to the existing trail on the south side of Ryan Road (Route 772).

Applicant's Response (May 6, 2010): *The SPEX Plat has been revised to provide a 10-foot wide trail within a 14-foot wide public access easement and the requested crosswalks. Please see proposed Condition of Approval #6.*

Current Issue Status: The Applicant has provided proposed Condition #6 which Adequately addresses the recommended pedestrian facilities. Issue resolved.

Conclusion

Provided that VDOT concurs with the Applicant's analysis referenced in Comment #2, OTS would not object to the approval of this application.

ATTACHMENT

1. Traffic Study Memo (May 5, 2010)

cc: Andrew Beacher, Assistant Director, OTS
Lou Mosurak, Senior Coordinator, OTS



WELLS + ASSOCIATES

TO: Jane McCarter
Loudoun County Division of Planning

CC: Jeffrey A. Nein, AICP
Roy Barnett

FROM: Michael J. Workosky, PTP, TOPS
James W. Watson, PTP
Wells + Associates, Inc.

DATE: ²⁰¹⁰ May 5, 2009

SUBJECT: Summary of Comments and Responses for
SPEX 2010-0001- Ryan Road Child Care Center;
Loudoun County, Virginia

Introduction

This letter presents a summary of comments and responses regarding the Ryan Road Child Care Center. The site is located on the north side of Ryan Road (VA Route 772) and east of Belmont Ridge Road (VA Route 659) in the Brambleton area of Loudoun County, Virginia. This letter is based on comments provided by Loudoun County Office of Transportation Services (OTS) dated April 29, 2010.

The comments provided by the County are based on the Ryan Road Property Special Exception Traffic Impact Study Update dated January 8, 2010.

The following summarizes the comments and responses regarding the traffic study. All revised tables and figures are attached.

Summary of Loudoun County Comments and Responses

County Comment 1. The Applicant's traffic study notes on page 6 that Ryan Road (Route 772) includes a crest / vertical curve in the vicinity of the proposed site entrance opposite Legacy Park Drive. This has been confirmed by OTS staff in a recent field visit. The applicant will need to demonstrate that adequate sight distance is provided to meet VDOT standards. This should be confirmed with VDOT.

W+A Response 1. As identified in new Condition 8a, the sight distance will be verified at the time of site plan review and will be confirmed with VDOT.

County Comment 2. The unsignalized Ryan Road (Route 772)/Legacy Park Drive intersection is currently operating at LOS C or better during both peak hours. However, the Applicant's traffic study also shows that with

*the addition of the site entrance, the southbound approach from the site to Ryan Road would operate at LOS E during both peak hours, assuming the addition of a separate southbound right turn lane (see **Attachment 8**). A condition of approval requiring installation of this turn lane is necessary. Further, the traffic study notes that enough gaps in through traffic flow will be created by the traffic signal at Belmont Ridge Road (Route 659) combined with the wide median on Ryan Road (Route 772) for storage and separate lanes for southbound traffic. Additional information, demonstrated by a traffic study addendum or other analysis, is required to substantiate this assertion. Any additional analysis should examine the possibility of a signal at this intersection and the signal's relationship with the existing signal at Belmont Ridge Road (Route 659) and Ryan Road (Route 772).*

W+A Response 2. A new Condition 8b has been added that requires the installation of the separate southbound right turn lane as shown on the Special Exception Plat. The unsignalized maneuvers for vehicles on the side streets of Ryan Road require a two-stage gap acceptance based on the wide median that is available for storage. Thus, these vehicles cross two lanes, then proceed across or into the adjoining lanes to enter the mainline traffic stream. The number of available gaps for vehicles to make these maneuvers were observed through field data collected by W+A in the peak hour, peak direction, (eastbound during the AM peak/westbound during the PM peak) along Ryan Road. Gaps were measured beginning at a minimum of six (6) seconds and recorded during each of the peak hours studied and are summarized on Table I in Appendix A.

The results indicate that majority of gaps ranged from 8 to 9 seconds during the AM peak hour and from 6 to 7 seconds during the PM peak hour. A total of 1,031 seconds were available during the AM peak hour and 989 seconds during the PM peak hour. Assuming a minimum crossing maneuver time of 6.5 seconds per vehicle as identified in the HCM, a total of 158 adequate gaps are available for vehicles during the AM peak hour and 152 adequate gaps are available during the PM peak hour. Thus, it appears that these gaps would accommodate the side-street left and through vehicles (98 AM peak hour/42 PM peak hour) projected at the site entrance, based on current traffic conditions.

Although it is anticipated that the through traffic on Ryan Road will increase, the gaps recorded do not account for the likelihood of a new traffic signal that would eventually be installed at the Ryan Road/Claiborne Parkway intersection, located approximately 2,000 feet to the east of the site driveway. This signal would likely introduce larger gaps in the westbound direction during the evening peak hour. In addition, although the minimum gap size used in the study was six (6.5) seconds, field observations indicated that most vehicles are comfortable making these maneuvers at five (5) seconds. Assuming a 5 second gap, an additional 20 adequate gaps for vehicles would be added during the AM and PM peak hour.

As reported in the January 2010 traffic study, the site driveway would not meet VDOT spacing criteria for a traffic signal given the relatively short distance to Belmont Ridge Road (850 feet). Further, the traffic study indicated that warrants for signalization would not be met at this location under total future conditions (see Appendix A). Thus, based on the previously prepared traffic report, the relatively low side-street volume, and the

available gaps that exist, these side-street movements would operate without major delays as identified in the traffic study.

County Comment 3. The Applicant's traffic study notes on page 20, Conclusion #5, that a separate westbound right-turn lane on Ryan Road (Route 772) is needed into the proposed site entrance. This needs to be included in the conditions of approval with this application.

W+A Response 3. Provisions for this turn lane have been added to the site plan conditions for this project.

County Comment 4. Please note that the centerline of the site entrance approach to Ryan Road (Route 772) does not appear to properly align with the existing median break for Legacy Park Drive. The proposed roadway alignment must meet VDOT standards; confirmation by VDOT is necessary.

W+A Response 4. The Applicant reviewed and discussed the proposed plan and the alignment with VDOT. VDOT staff indicated that the alignment would be acceptable and this will be verified at site plan review.

County Comment 5. Interparcel access is recommended in order to reduce trip lengths and minimize impact on Ryan Road, a major collector facility. However, the opportunity for interparcel access may be limited for this particular site and the surrounding subdivision (SBPL-2010-0001) given the existing and approved developments on all surrounding parcels. Please confirm.

W+A Response 5. All of the adjoining properties have either been designed or are under construction. Thus, there are no opportunities for interparcel access.

County Comment 6. On Sheet 3 of the Plat, a 10' wide public access easement is shown along the site frontage. In order to facilitate pedestrian travel, it is recommended that the Applicant provide a 14' wide public access easement and a 10-foot wide trail along the site frontage along with a crosswalk across the site entrance. Subject to VDOT approval, the Applicant should also provide a crosswalk and signage to connect to the existing trail on the south side of Ryan Road (Route 772).

W+A Response 6. The public access easement, trail, and crosswalks have been added to the Special Exception Plat.

Questions regarding this document should be directed to Wells + Associates.

APPENDIX A
SUPPLEMENTAL TRAFFIC INFORMATION

Table I
 Ryan Road Child Care Center
 Ryan Road Gap Acceptance Study (I)

Gap Time (Sec.)	No. of Observations		Total Seconds	
	AM Peak Eastbound	PM Peak Westbound	AM Peak Eastbound	PM Peak Westbound
6 - 7 seconds	18	35	108	210
7 - 8 seconds	17	25	119	175
8 - 9 seconds	19	19	152	152
9 - 10 seconds	10	13	90	117
10 - 11 seconds	10	6	100	60
11 - 12 seconds	2	7	22	77
12 - 13 seconds	2	5	24	60
13 - 14 seconds	2	3	26	39
14 - 15 seconds	3	3	42	42
15 - 16 seconds	3	1	75	15
16 - 17 seconds	1	-	16	-
17 - 18 seconds	1	-	17	-
18 - 19 seconds	2	1	36	18
19 - 20 seconds	4	-	76	-
20 - 21 seconds	1	-	20	-
21 - 22 seconds	-	-	-	-
22 - 23 seconds	1	-	22	-
23 - 24 seconds	-	-	-	-
24 - 25 seconds	-	1	-	24
25 - 26 seconds	-	-	-	-
26 - 27 seconds	1	-	26	-
27 - 28 seconds	-	-	-	-
28 - 29 seconds	-	-	-	-
29 - 30 seconds	1	-	29	-
30 - 31 seconds	-	-	-	-
31 - 32 seconds	1	-	31	-
Totals	101	119	1,031	989

Gap Time Required (2) 6.5 seconds/vehicle

Summary

Peak Hour, Peak Direction	No. of Adequate Gaps	Critical Movements
AM Peak Hour	158 gaps	98 vehicles
PM Peak Hour	152 gaps	42 vehicles

Notes: (1) Based on data collected by WVA on May 4 and 5, 2010.

(2) Crossing maneuver from minor street as defined by HCM.

Table H11

Ryan Road (Route 772)/Legacy Park Drive/Future Site Driveway

Ryan Road Property

2015 Total Future

Warrants 1A, 1B, 1C

	Ryan Road (Route 772)		Legacy Park Drive/Future Site Driveway		Warrant
	Projected ADT	Min. Required EADT*	Projected ADT	Min. Required EADT *	
Warrant 1A - Minimum Vehicular Volume	20,340	9,600	290	3,200	No
Warrant 1B - Interruption of Continuous Traffic	20,340	14,400	290	1,600	No
Warrant 1C - Combination 80%	20,340	7,680	290	2,560	No
	20,340	11,520	290	1,280	No

Source: Institute of Traffic Engineers, *Manual of Traffic Signal Design*, 2nd Edition (Numbers revised by VDOT/NOVA policy)

Notes: * Minimum Required EADT is based on number of approach lanes.